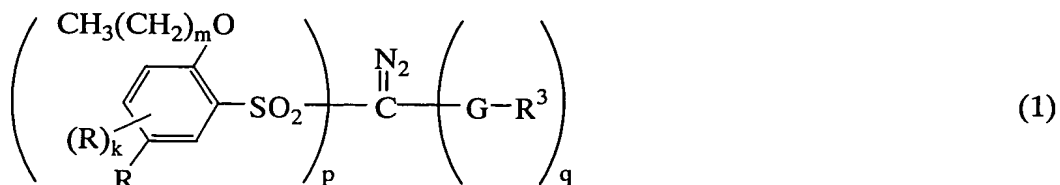


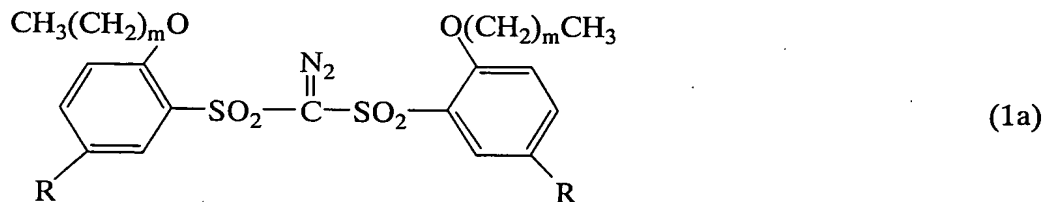
CLAIMS:

1. A sulfonyldiazomethane compound having the following general formula (1):



5 wherein R is each independently a substituted or unsubstituted straight, branched or cyclic alkyl group of 1 to 4 carbon atoms, G is SO<sub>2</sub> or CO, R<sup>3</sup> is a substituted or unsubstituted straight, branched or cyclic alkyl group of 1 to 10 carbon atoms or a substituted or unsubstituted aryl group of 6 to 14 carbon atoms, p is 1 or 2, q is 0 or 1, satisfying p+q = 2, m is an integer of 3 to 11, and k is an integer of 0 to 4, with the proviso that in the event k is at least 1, at least one of R associated with k may bond with the R at the 4-position to form a cyclic structure with the carbon atoms on the benzene ring to which these R's are attached, and then, these two R's bond together to form an alkylene group of 3 to 4 carbon atoms.

20 2. A sulfonyldiazomethane compound having the following general formula (1a):

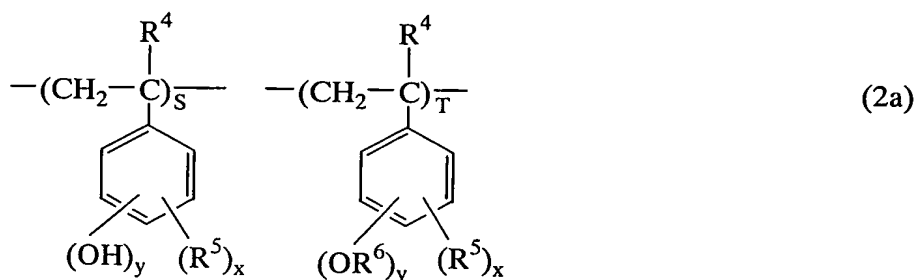


25 wherein R is each independently a substituted or unsubstituted straight, branched or cyclic alkyl group of 1 to 4 carbon atoms, and m is an integer of 3 to 11.

3. A photoacid generator for a chemical amplification type resist composition comprising the sulfonyldiazomethane compound of claim 1.
- 5 4. A chemical amplification type resist composition comprising
- (A) a resin which changes its solubility in an alkaline developer under the action of an acid, and
  - (B) the sulfonyldiazomethane compound of claim 1 which
- 10 generates an acid upon exposure to radiation.
5. A chemical amplification type resist composition comprising
- (A) a resin which changes its solubility in an
- 15 alkaline developer under the action of an acid,
- (B) the sulfonyldiazomethane compound of claim 1 which generates an acid upon exposure to radiation, and
  - (C) a compound capable of generating an acid upon exposure to radiation, other than component (B).
- 20
6. The resist composition of claim 4 wherein the resin
- (A) has such substituent groups having C-O-C linkages that the solubility in an alkaline developer changes as a result of scission of the C-O-C linkages under the action of an
- 25 acid.
7. The resist composition of claim 6 wherein the resin
- (A) is a polymer containing phenolic hydroxyl groups in which hydrogen atoms of the phenolic hydroxyl groups are
- 30 substituted with acid labile groups of one or more types in a proportion of more than 0 mol% to 80 mol% on the average of the entire hydrogen atoms of the phenolic hydroxyl groups, the polymer having a weight average molecular weight of 3,000 to 100,000.

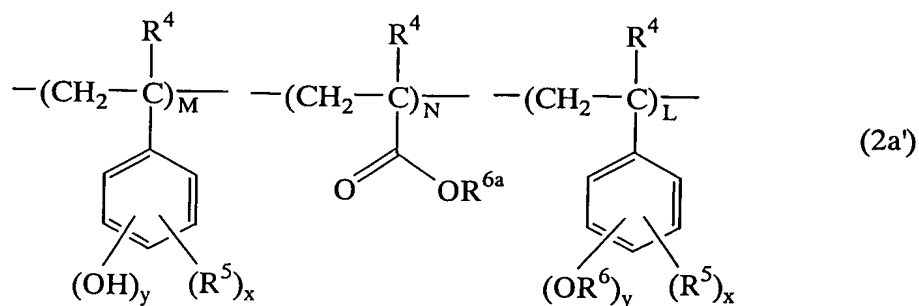
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8. The resist composition of claim 7 wherein the resin (A) is a polymer comprising recurring units of the following general formula (2a):



- 5 wherein  $\text{R}^4$  is hydrogen or methyl,  $\text{R}^5$  is a straight, branched or cyclic alkyl group of 1 to 8 carbon atoms,  $x$  is 0 or a positive integer,  $y$  is a positive integer, satisfying  $x+y \leq 5$ ,  $\text{R}^6$  is an acid labile group,  $S$  and  $T$  are positive integers, satisfying  $0 < T/(S+T) \leq 0.8$ ,
- 10 wherein the polymer contains units in which hydrogen atoms of phenolic hydroxyl groups are partially substituted with acid labile groups of one or more types, a proportion of the acid labile group-bearing units is on the average from more than 0 mol% to 80 mol% based on the entire polymer, and
- 15 the polymer has a weight average molecular weight of 3,000 to 100,000.

9. The resist composition of claim 6 wherein the resin (A) is a polymer comprising recurring units of the following general formula (2a'):

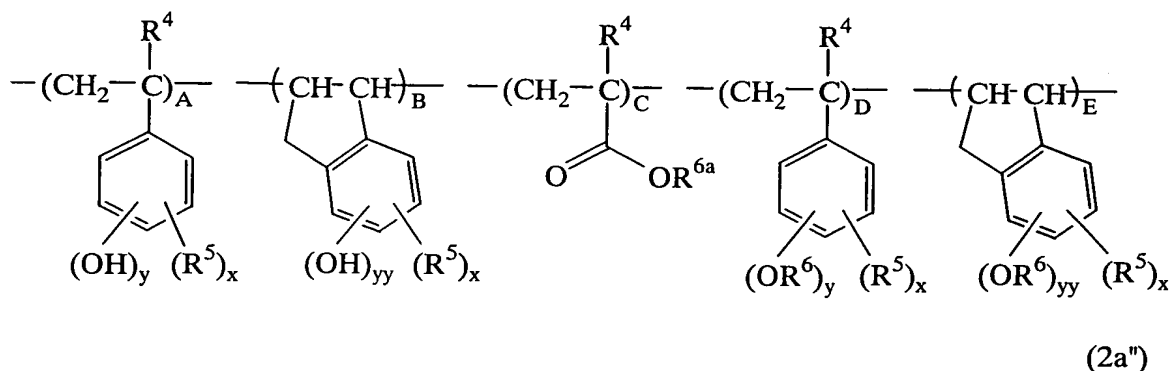


wherein  $R^4$  is hydrogen or methyl,  $R^5$  is a straight, branched or cyclic alkyl group of 1 to 8 carbon atoms,  $R^6$  is an acid labile group,  $R^{6a}$  is hydrogen or an acid labile group, at least some of  $R^{6a}$  being acid labile groups,  $x$  is 0 or a positive integer,  $y$  is a positive integer, satisfying  $x+y \leq 5$ ,  $M$  and  $N$  are positive integers,  $L$  is 0 or a positive integer, satisfying  $0 < N/(M+N+L) \leq 0.5$  and  $0 < (N+L)/(M+N+L) \leq 0.8$ ,

wherein the polymer contains on the average from more than 0 mol% to 50 mol% of those units derived from acrylate and methacrylate, and also contains on the average from more than 0 mol% to 80 mol% of acid labile group-bearing units, based on the entire polymer, and the polymer has a weight average molecular weight of 3,000 to 100,000.

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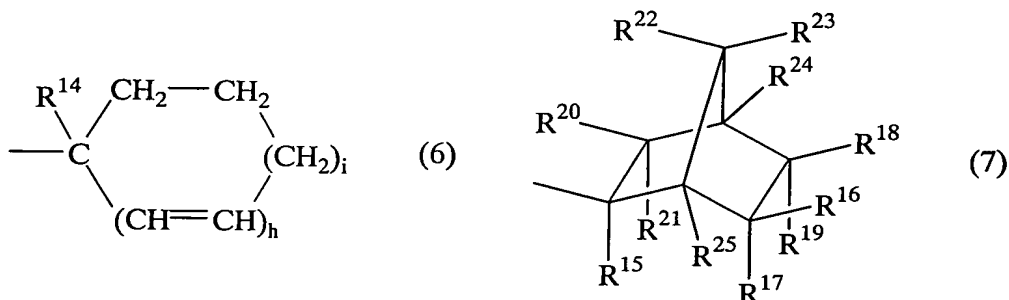
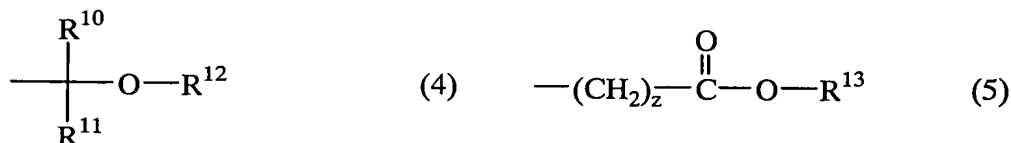
10. The resist composition of claim 6 wherein the resin (A) is a polymer comprising recurring units of the following general formula (2a"):



wherein  $R^4$  is hydrogen or methyl,  $R^5$  is a straight, branched or cyclic alkyl group of 1 to 8 carbon atoms,  $R^6$  is an acid labile group,  $R^{6a}$  is hydrogen or an acid labile group, at least some of  $R^{6a}$  being acid labile groups,  $x$  is 0 or a positive integer,  $y$  is a positive integer, satisfying  $x+y \leq 5$ ,  $yy$  is 0 or a positive integer, satisfying  $x+yy \leq 5$ ,  $A$  and  $B$  are positive integers,  $C$ ,  $D$  and  $E$  each are 0 or a positive integer, satisfying  $0 < (B+E)/(A+B+C+D+E) \leq 0.5$  and  $0 < (C+D+E)/(A+B+C+D+E) \leq 0.8$ ,

wherein the polymer contains on the average from more than 0 mol% to 50 mol% of those units derived from indene and/or substituted indene, and also contains on the average from more than 0 mol% to 80 mol% of acid labile group-bearing units, based on the entire polymer, and the polymer has a weight average molecular weight of 3,000 to 100,000.

11. The resist composition of claim 7 wherein the acid labile group is selected from the class consisting of groups of the following general formulae (4) to (7), tertiary alkyl groups of 4 to 20 carbon atoms, trialkylsilyl groups whose alkyl moieties each have 1 to 6 carbon atoms, oxoalkyl groups of 4 to 20 carbon atoms, and aryl-substituted alkyl groups of 7 to 20 carbon atoms,



wherein  $\text{R}^{10}$  and  $\text{R}^{11}$  each are hydrogen or a straight, branched or cyclic alkyl having 1 to 18 carbon atoms, and  $\text{R}^{12}$  is a monovalent hydrocarbon group of 1 to 18 carbon atoms which may contain a heteroatom, a pair of  $\text{R}^{10}$  and  $\text{R}^{11}$ ,  $\text{R}^{10}$  and  $\text{R}^{12}$ , or  $\text{R}^{11}$  and  $\text{R}^{12}$  may together form a ring, with the proviso that  $\text{R}^{10}$ ,  $\text{R}^{11}$ , and  $\text{R}^{12}$  each are a straight or branched alkylene of 1 to 18 carbon atoms when they form a ring,

$\text{R}^{13}$  is a tertiary alkyl group of 4 to 20 carbon atoms, a trialkylsilyl group in which each of the alkyls has 1 to 6 carbon atoms, an oxoalkyl group of 4 to 20 carbon atoms, or a group of the formula (4),  $z$  is an integer of 0 to 6,

$R^{14}$  is a straight, branched or cyclic alkyl group of 1 to 8 carbon atoms or an aryl group of 6 to 20 carbon atoms which may be substituted,  $h$  is 0 or 1,  $i$  is 0, 1, 2 or 3, satisfying  $2h+i = 2$  or 3,

5  $R^{15}$  is a straight, branched or cyclic alkyl group of 1 to 8 carbon atoms or an aryl group of 6 to 20 carbon atoms which may be substituted,  $R^{16}$  to  $R^{25}$  are each independently hydrogen or a monovalent hydrocarbon group of 1 to 15 carbon atoms which may contain a heteroatom, any two of  $R^{16}$  to  $R^{25}$ ,  
10 taken together, may form a ring, each of the ring-forming two of  $R^{16}$  to  $R^{25}$  is a divalent hydrocarbon group of 1 to 15 carbon atoms which may contain a heteroatom, or two of  $R^{16}$  to  $R^{25}$  which are attached to adjoining carbon atoms may bond together directly to form a double bond.

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12. The resist composition of claim 4 further comprising (D) a basic compound.

13. The resist composition of claim 4 further comprising  
20 (E) an organic acid derivative.

14. The resist composition of claim 4 further comprising as an organic solvent a propylene glycol alkyl ether acetate, an alkyl lactate or a mixture thereof.

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15. A process for forming a pattern, comprising the steps of:

applying the resist composition of claim 4 onto a substrate to form a coating,

30 heat treating the coating and exposing the coating to high energy radiation with a wavelength of up to 300 nm or electron beam through a photomask,

optionally heat treating the exposed coating, and developing the coating with a developer.